Cell Stem Cell
ISSCR: President's Note

Reflections of an ISSCR President, 2010–2011

As I reach the end of my presidency of the ISSCR, I've come to realize that what makes this society special is its cohesiveness, openness, and sense of community. The leadership of the ISSCR is dynamic, ever-changing with each coming year. Past leaders work together with present and future leaders to form a continuum of momentum that fuels existing initiatives and launches new ones. The ISSCR's staff, headed by Executive Director Nancy Witty, has been tireless in their devotion to meeting the objectives of the society. During this past year, top stem cell researchers throughout the world have participated with staff in telephone conference calls—held at wee hours of the morning for some and late hours into the night for others—to provide me with information and counsel regarding urgent policy matters, annual and regional meetings, educational initiatives, new ISSCR awards, and strategies for raising the necessary finances that will allow ISSCR to broaden its initiatives and support the education and training of the world's future stem cell researchers and translational physician scientists.

Awards are one way we can acknowledge the contributions to the field made by our members. This past year, we continued to recognize the key contributions of the new generation of scientists committed to stem cell biology with the award of the third annual Outstanding Young Investigator Award to Robert Blelloch (profiled in this issue of *Cell Stem Cell*; Kriegstein, 2011). In addition, we were delighted to add two new awards to our portfolio, the McEwen Centre Award for Innovation and the ISSCR Public Service Award. The McEwen Centre Award for Innovation, supported by the McEwen Centre for Regenerative Medicine in Toronto, Ontario Canada, recognizes original thinking and groundbreaking research pertaining to stem cells or regenerative medicine that opens new avenues of exploration toward the understanding or treatment of human disease or affliction. We are pleased to present this award for the first time at the 2011 Annual Meeting to Drs. Kazutoshi Takahashi and Shinya Yamanaka, for their paradigm-shifting work demonstrating the reprogramming of somatic cells using transcription factors, a technology that has rapidly been adopted and developed by the research community to address a myriad of biological and medical questions. We will also present the inaugural ISSCR Public Service Award to Robert Klein, Chairman of the Governing Board of the California Institute for Regenerative Medicine (CIRM), for his outstanding contribution of public service to the field of stem cell research and regenerative medicine. Through his vision and leadership, Bob Klein secured for California long-term financial support for stem cell research that has provided a framework to foster new and established talent, innovative science, and clinical application. Bob's advocacy for stable financial support for stem cell research on the international stage is unprecedented.

As we face the next decade, stem cell researchers stand at a nexus with physicians, biotechnology, and the pharmaceutical industry in advancing the most promising medical treatments of our generation. But this promise can only become a reality if we are able to broaden and bolster our efforts to educate students, the public, science writers, and policy makers so that they understand the vital importance of this research and the need to pursue and support it.

As the voice of ethically and scientifically sound stem cell research and its application worldwide, the ISSCR must strengthen our message and also work hard to unearth new avenues to expand research support in the face of economically hard times. The ISSCR needs the entire stem cell community to join us in our efforts to achieve these goals and keep the future of stem cell research and regenerative medicine bright. The greatest danger we face is complacency with our great science and translational research at a time when support—financial and practical—for stem cell research is being challenged worldwide. Widespread misperceptions and misinformation about stem cells are fueling this danger. We owe it to the public, the patients, and future generations to assume our responsibility and take on a more proactive role in education at all levels.

One of the greatest misperceptions in the public ethos is that stem cell therapy is something still on the horizon. In fact, it dates back to the 1950s and 60s, when kidney, bone marrow, liver, and heart transplants marked a new way of treating devastating human disorders for which there had previously been no hope for survival. These early medical treatments, now in practice throughout the world, represented the dawn of stem cell therapies and regenerative medicine. Close to my heart, in the 1970s, Howard Green developed methods for culturing human epidermal stem cells in the laboratory under conditions where their activity was maintained long term. His team soon applied this methodology to treat burn patients, now a 30 year success story. The success of Michele De Luca and colleagues, in adapting this methodology to culture corneal stem cells for the treatment of blindness, has now been followed for 10 years. With the groundbreaking work in converting human skin fibroblasts into induced pluripotent stem cells (iPSCs), and with continued work on their embryonic counterparts, the door is now open wider than ever before for deepening our understanding of many devastating diseases for which there is currently no cure. Every month, scientists are reporting successes in generating disease-specific iPSCs or directing their differentiation to uncover new and valuable insights into the phenotypes of devastating human diseases. Moreover, when coupled with improvements in iPSC generation, researchers are moving toward the creation of patient-specific iPSCs that could be differentiated into desired cell types for possible clinical applications. As the history of biomedical science has demonstrated time and time again, basic research and mechanistic understanding are critical steps in improving diagnostics and developing treatments for disease.

The existing examples of stem cell therapies in the clinic show that translation of basic discoveries into medical treatments takes time. However, they also underscore that stem cell therapies do not simply hold promise—there are already longstanding successes of these therapies, with others on the horizon. The promise that stem cell research holds for the next decade is for the development of many new and improved therapies over a much broader swath of human diseases—stroke, heart

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disease, cancers, diabetes, neurodegenerative disorders—many of which were not even thought possible just a few years back. Moreover, the benefits of stem cell research are not limited to stem cell therapies themselves. Pharmaceutical and biotechnology industries are clamoring for the knowledge and technology stem cells offer to improve diagnostics and design of new small molecules, drugs, and multidrug treatments for a variety of human disorders.

Many of the arguments in opposition of certain avenues of stem cell research are not based on scientific understanding. Many science writers need greater knowledge about the major progress in stem cell therapies over the past 50 years and of the enormous potential—and also pitfalls—that stem cell research holds. Many governments may not recognize the devastating impact that cutting back or restricting basic stem cell research could have on the health and economic growth of their nations. The public often doesn't realize that basic science is the necessary foundation for the development of clinical applications. Even well-intentioned leaders who hold the purse strings of the limited government dollars for research, who come under governmental or public pressures to forego basic science, should be reminded that support for basic science is what always has and always will serve as the driving force behind clinical and translational applications, as well as new and improved drugs for the treatments of human disease. The answer is clearly outreach and education, and we are all, in my view, called to share the responsibility to engage society in our science, whether it is the public, government, media, our peers, or our families. Our own research and that of the generations that we have trained and will train is dependent upon our stepping up to the plate to convey our knowledge to others. In turn, we owe it to the world to conduct our research in an ethically responsible fashion and to meet patient standards for safety and effectiveness of stem cell therapies.

I hope these points will encourage you to talk with friends, colleagues, and the public and to engage your local governmental representatives and science writers, perhaps inviting them to visit your laboratories, meet your teams, and learn about the passion that we have for what we do and why we do it. I also hope that you will open your laboratory doors to a high school student, undergraduate, or teacher to conduct research for a summer and help bridge the gap between scientists and schools. Being married to the Director of Philosophy and Education at Teacher's College at Columbia University, I may be biased in my view that the answer is always rooted in education. That said, I do strongly believe that after all these years, we still have something to learn from Plato's dialogs about the things that matter in human life, and from recognizing that science cannot operate in a vacuum. We need the world's help, and it is our responsibility to convey our excitement and enthusiasm for what we do and its enormous benefit to mankind to those who either never knew or have forgotten.

The ISSCR 2010 Annual Report, '"Connecting a World of Possibilities," published in *Cell Stem Cell* in April, delineated a number of new educational initiatives that the ISSCR will be developing over the coming year. These efforts will continue when Fred Gage becomes our next ISSCR president at the conclusion of this year's June ISSCR meeting. Some, such as our collation of stem cell resources and tools for undergraduate teaching, are already underway. Look for additional opportunities to support this and future efforts over the upcoming year. And finally, if you haven't done so already, please become a member of the ISSCR. With your help, our society can continue to improve and expand our educational initiatives with the ultimate goal of advancing stem cell research and translation for the future. I look forward to seeing you all at the 9th Annual ISSCR Meeting, June 15th –18th, 2011 in Toronto, and I am grateful to all of you for giving me the opportunity to serve you as your president over this past year.

REFERENCE

Kriegstein, A. (2011). Cell Stem Cell *8*, this issue, 631–632.

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DOI 10.1016/j.stem.2011.05.003